What is claimed:

1. An electrostatic precipitator (ESP) system, comprising:

a corona discharge electrode;

a pair of collector electrodes; and

an insulated driver electrode located between said pair of collector electrodes.

2. The system of claim 1, wherein said pair of collector electrodes extend in a downstream direction away from said corona discharge electrode, and wherein said system further comprises a fan to produce a flow of air in said downstream direction.

3. The ESP system of claim 2, wherein:

said corona discharge electrode produces a corona discharge that imparts a charge on particles in the air that flows past said corona discharge electrode;

said insulated driver electrode repels the charged particles toward said collector electrodes; and

said collector electrodes attract and collect at least a portion of the charged particles.

4. The system of claim 1, wherein:

a first voltage potential difference exists between said corona discharge electrode and said pair of collector electrodes; and

a second voltage potential difference exists between said insulated driver electrode and said pair of collector electrodes, said first and second voltage potentials differences being substantially the same.

5. The system of claim 3, wherein:

a first voltage potential difference exists between said corona discharge electrode and said pair of collector electrodes; and

a second voltage potential difference exists between said insulated driver electrode and said pair of collector electrodes, said first voltage potential difference being different than said second voltage potentials difference.

6. The system of claim 1, further comprising a high voltage source to provide a high voltage potential difference between said corona discharge electrode and said collector electrodes.

7. The system of claim 6, wherein said corona discharge electrode and said insulated driver electrode are at the same voltage potential.

8. The system of claim 7, wherein said high voltage source also provides the high voltage potential difference between said collector electrodes and said insulated driver electrode.

9. The system of claim 6, wherein said corona discharge electrode and said insulated driver electrode are at different voltage potentials.

10. The system of claim 9, further comprising a further high voltage source to provide a further voltage potential difference between said collector electrodes and said insulated driver electrode.

11. The system of claim 1, wherein said corona discharge electrode and said insulated driver electrode are at a same voltage potential.

12. The system of claim 1, wherein:

said corona discharge electrode is at a first voltage potential;

said pair of collector electrodes are at a second voltage potential different than said first voltage potential; and

said insulated driver electrode is at a third voltage potential different than said first and second voltage potentials.

13. The system of claim 1, wherein the insulated driver electrode is coated with an ozone reducing catalyst.

14. The system of claim 1, wherein the insulated driver includes an electrically conductive electrode covered by a dielectric material.

15. The system of claim 14, wherein the dielectric material is coated with an ozone reducing catalyst.

16. The system of claim 14, wherein the dielectric material comprises a non-electrically conductive ozone reducing catalyst.

17. The system of claim 14, wherein the electrically conductive electrode of the insulated driver electrode includes generally flat elongated sides that are generally parallel with said collector electrodes.

18. The system of claim 1, wherein said insulated driver electrode includes at least one wire shaped electrode covered by a dielectric material.

19. The system of claim 1, wherein the driver electrode includes a row of wire shaped electrodes each covered by a dielectric material, said row being generally parallel to said collector electrodes.

20. The system of claim 1, wherein said insulated driver electrode is located downstream from said corona discharge electrode.

21. An electrostatic precipitator ESP system, comprising:

an ionization region to charge particles in air that flows through the ionization region; and

a collection region, downstream from the ionization region, to collect at least a portion of the charged particles as the air flows through the collection region;

wherein said collection region includes at least one insulated driver electrode located adjacent a collecting electrode.

22. The system of claim 21, wherein said ionization region includes at least one corona discharge electrode that has an opposite polarity to said collecting electrode in said collecting region.

23. The system of claim 22, wherein said at least one corona discharge electrode is at a same voltage potential as said at least one insulated driver electrode.

24. The system of claim 22, wherein said at least one corona discharge electrode is at a different voltage potential than said at least one insulated driver electrode.

25. The system of claim 21, further comprising a fan to produce a flow of air in a downstream direction from said ionization region toward said collecting region.

26. The system of claim 25, wherein said fan is located upstream from said ionization region, said fan pushing air.

27. The system of claim 25, wherein said fan is located downstream from said ionization region, said fan pulling air.

28. An electrostatic precipitator (ESP) system, comprising:

a corona discharge array including at least one corona discharge electrode;

a collector array including at least two collector electrodes;

a driver array including an insulated driver electrode located between each pair of adjacent collector electrodes in said collector array; and

a high voltage source that provides a first voltage potential difference between said corona discharge array and said collector array, and a second voltage potential between said collector array and said driver array.

29. The system of claim 28, wherein said corona discharge array is grounded.

30. The system of claim 28, wherein said corona discharge array and said driver array are grounded, and wherein said collector array receives a negative voltage potential from said high voltage source.

31. A method for providing an electrostatic precipitator (ESP) system with increased particle collecting efficiency, comprising:

providing a corona discharge electrode;

providing at least a pair of collector electrodes that extend downstream from said corona discharge electrode;

providing an insulated driver electrode between each pair of adjacent collector electrodes;

proving a voltage potential difference between each driver electrode and said collector electrodes that is greater than a voltage potential difference that could have been obtained, without arcing, if each driver electrode were not insulated.

32. A method for providing an ESP system with increased particle collecting efficiency, comprising:

providing an ionization region to charge particles in air that flows through the ionization region; and

providing a collection region, downstream from the ionization region, to collect at least a portion of the charged particles as the air flows through the collection region;

wherein said collection region includes at least one insulated driver electrode located adjacent a collecting electrode.

33. An electrostatic precipitator (ESP) system, comprising:

mechanical means for producing a flow of air;

a corona discharge electrode to charge particles in the flow of air;

a collector electrode to attract and collect at least a portion of the charged particles in the flow of air; and

an insulated driver electrode, generally adjacent said collector electrode, to push the charged particles toward said collector electrode.

34. The ESP system of claim 33, further comprising:

a high voltage source that provides a voltage potential to at least one of said corona discharge electrode and said collector electrode to thereby provide a potential different therebetween.

35. The system of claim 34, wherein:

said corona discharge electrode is grounded;

said collector electrode is negatively charged by said high voltage source; and

said insulated driver electrode is grounded.

36. The system of claim 34, wherein said corona discharge electrode and said insulated driver electrode are at a same voltage potential.

37. The system of claim 34, wherein:

said corona discharge electrode is at a first voltage potential;

said collector electrode is at a second voltage potential different than said first voltage potential; and

said insulated driver electrode is at a third voltage potential different than said first and second voltage potentials.

38. The system of claim 34, wherein the insulated driver electrode is coated with an ozone reducing catalyst.

39. The system of claim 34, wherein the insulated driver includes an electrically conductive electrode covered by a dielectric material.

40. The system of claim 39, wherein the dielectric material is coated with an ozone reducing catalyst.

41. The system of claim 39, wherein the dielectric material comprises a non-electrically conductive ozone reducing catalyst.

42. The system of claim 39, wherein the electrically conductive electrode of the insulated driver electrode includes generally flat elongated sides that are generally parallel with said collector electrodes.

43. The system of claim 33, wherein said insulated driver electrode includes at least one wire shaped electrode covered by a dielectric material.

44. The system of claim 33, wherein the driver electrode includes a row of wire shaped electrodes each covered by a dielectric material, said row being generally parallel to said collector electrode.

45. An electrostatic precipitator (ESP) system, comprising:

a corona discharge electrode that is grounded or floating;

a pair of collector electrodes extending downstream from said corona discharge electrode, said collector electrodes having a high voltage potential;

an insulated driver electrode located between said pair of collector electrodes; and

means for producing a downstream flow of air past said corona discharge electrodes.

46. The system of claim 45, wherein said insulated driver electrode is grounded or floating.

47. The system of claim 45, wherein said insulated driver electrode has a negative voltage potential that is less than a high negative voltage potential of said collector electrodes.

48. The system of claim 45, wherein said insulated driver electrode has a positive voltage potential.

49. An electrostatic precipitator (ESP) system, comprising:

a corona discharge electrode;

a plurality of collector electrodes;

an insulated driver electrode located between each pair of collector electrodes; and

a fan to produce a flow of air to be cleaned by said corona discharge, collector and insulated driver electrodes.

50. An electrostatic precipitator (ESP) system, comprising:

a corona discharge electrode;

a plurality of collector electrodes;

an insulated driver electrode located between each pair of collector electrodes; and

a germicidal lamp.

51. An air cleaning system, comprising:

a housing including at least an air inlet and an air outlet;

an electrode assembly including a corona discharge electrode, a plurality of collector electrodes, and an insulated driver electrode between each pair of collector electrodes;

a high voltage source that provides a high voltage potential difference between said corona discharge electrode and said collector electrodes, and a high voltage potential difference between said collector electrodes and said insulated driver electrode; and

a fan to produce a flow of air from said air inlet to said air outlet, the flow of air including airborne particles;

wherein at least a portion of the airborne particles collect on surfaces of said collector electrodes.

52. The system of claim 51, wherein the high voltage potential difference between said corona discharge electrode and said collector electrodes is the same as the high voltage potential difference between said collector electrodes and said insulated driver electrodes.

53. The system of claim 51, wherein the high voltage potential difference between said corona discharge electrode and said collector electrodes is different than the high voltage potential difference between said collector electrodes and said insulated driver electrodes.

54. A method for collecting airborne particles, comprising:

providing an ionization region to charge particles in air that flows through the ionization region;

providing a collection region, downstream from the ionization region, said collection region including at least one insulated driver electrode located adjacent a collector electrode; and

collecting at least a portion of the charged particles, on a surface of said collector electrode, as the air flows through the collection region.

55. An electrostatic precipitator (ESP) system, comprising:

at least one corona discharge electrode;

at least one collector electrode; and

at least one insulated driver electrode.

56. The system of claim 55, wherein said at least one collector electrode includes a pair of collector electrodes, and wherein at least one said insulated driver electrode is positioned between said pair of collector electrodes.

57. The ESP system of claim 56, wherein said pair of collector electrodes and said at least one said insulated driver electrode position between said pair of collector electrodes are substantially parallel to one another.

58. The ESP system of claim 56, wherein said pair of collector electrodes extend in a downstream direction away from said at least one corona discharge electrode.

59. The ESP system of claim 56, wherein:

each said corona discharge electrode produces a corona discharge that imparts a charge on particles in the air that flows past said corona discharge electrode;

said at least one insulated driver electrode located between said pair of collector electrodes repels the charged particles toward said pair of collector electrodes; and

said pair of collector electrodes attract and collect at least a portion of the charged particles.

60. The system of claim 56, wherein:

a first voltage potential difference exists between said at least one corona discharge electrode and said pair of collector electrodes; and

a second voltage potential difference exists between said at least one insulated driver electrode and said pair of collector electrodes, said first and second voltage potential differences being substantially the same.

61. The system of claim 56, wherein:

a first voltage potential difference exists between said at least one corona discharge electrode and said pair of collector electrodes; and

a second voltage potential difference exists between said at least one insulated driver electrode and said pair of collector electrodes, said first voltage potential difference being different than said second voltage potential difference.

62. The system of claim 56, further comprising a high voltage source to provide a high voltage potential difference between said corona discharge electrode and said collector electrodes.

63. The system of claim 62, wherein each said corona discharge electrode and each said insulated driver electrode are at the same voltage potential.

64. The system of claim 62, wherein said high voltage source also provides the high voltage potential difference between said collector electrodes and said insulated driver electrode.

65. The system of claim 62, wherein said corona discharge electrode and said insulated driver electrode are at different voltage potentials.

66. The system of claim 62, further comprising a further high voltage source to provide a further voltage potential difference between said collector electrodes and said insulated driver electrode.

67. The system of claim 55, wherein each said corona discharge electrode and each said insulated driver electrode are at a same voltage potential.

68. The system of claim 56, wherein:

said at least one corona discharge electrode is at a first voltage potential;

said pair of collector electrodes are at a second voltage potential different than said first voltage potential; and

said at least one insulated driver electrode is at a third voltage potential different than said first and second voltage potentials.

69. The system of claim 55, wherein at least one said insulated driver electrode is coated with an ozone reducing catalyst.

70. The system of claim 55, wherein each said insulated driver electrode includes an electrically conductive electrode covered by a dielectric material.

71. The system of claim 70, wherein said dielectric material is coated with an ozone reducing catalyst.

72. The system of claim 71, wherein said dielectric material comprises a non-electrically conductive ozone reducing catalyst.

73. The system of claim 56, wherein said at least one said insulated driver electrode position between said pair of collector electrodes includes generally flat elongated sides that are generally parallel with said pair of collector electrodes.

74. The system of claim 70, wherein said dielectric material is a double laminated dielectric insulator.

75. The system of claim 55, wherein each said insulated driver electrode includes at least one wire shaped electrode covered by a dielectric material.

76. The system of claim 55, wherein at least one said driver electrode includes a row of wire shaped electrodes each covered by a dielectric material, said row being generally parallel to an adjacent said collector electrode.

77. The system of claim 55, wherein each said insulated driver electrode is located downstream from said at least one corona discharge electrode.

78. The method of claim 34, wherein an electrical field is created between said driver electrode and said pair of collector electrodes greater than an electrical field conventionally used in ESP systems.

79. The ESP system of claim 49, further comprising a housing unit.

80. The ESP system of claim 79, wherein the housing unit may be a substantially vertical, horizontal, circular, square, spiral or other common geometric shape or any combination thereof.

81. An electrostatic precipitator (ESP) system, comprising:

a corona discharge array including at least one corona discharge electrode;

a collector array including at least one pair of collector electrodes;

a driver array including at least one insulated driver electrode located between each said pair of collector electrodes; and

a high voltage source that provides a first voltage potential difference between said corona discharge array and said collector array, and a second voltage potential between said collector array and said driver array;

wherein an electrical field is generated between each said driver electrode and said pair of collector electrodes that said driver electrode is located between, said electric field being greater than an electric field generated by conventional ESP systems.